

ABSTRACT

MAGNETIC BIASING LAYER FOR GMR SENSOR OF A MAGNETIC HEAD FOR A HARD DISK DRIVE

A GMR sensor of a magnetic head for a hard disk drive including a free magnetic
5 layer that is disposed between two hard bias layers that creates a bias magnetic field
within the free magnetic layer. A bias reduction layer is disposed parallel to the free
magnetic layer, and a spacer layer is disposed parallel to and between the free magnetic
layer and the bias reduction layer. A negative magnetic coupling between the free
magnetic layer and the bias reduction layer induces a bias reduction magnetic field in the
10 free magnetic layer. The bias reduction field substantially counteracts the bias field in
the central portion of the free magnetic layer, and the sensitivity of the free magnetic
layer to small magnetic fields from the magnetic disk is significantly increased. A hard
disk drive with decreased track width and increased areal density using this magnetic
head is also disclosed.

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